

Tripping and Re-Cocking Mechanism and Apparatus

Technical Field

This invention relates to a tripping and re-cocking mechanism that is adaptable to a frame of a structure of an apparatus by which the apparatus is repositioned for its next cycle or step of operation.

Background to the Invention

In the disclosure pertaining to US Letters Patent # 6,681,614, granted January 27, 2004, Apparatus for Testing Co-Efficient of Friction of A Road Surface, the frame of the apparatus is re-positioned by hand for its next cycle or operation. This invention is an improvement over the tripping and the manual re-cocking of the mechanism in the noted patent as well as providing for a mechanism that is suitable for efficiently re-positioning a variety of apparatus which require re-positioning after a cycle or step of operation..

In the disclosure of the noted patent, a tripping mechanism mounted on the rear of the apparatus releases the apparatus in its cycle or operation from an upper position to a lower position. The apparatus is then repositioned to its upper or operational position by hand-raising the rear end of the apparatus so that its tripping mechanism would once again be cocked for the next cycle or step of operation of the apparatus.

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1 Summary Of The Invention

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4 This invention is an advance over the technique disclosed in the noted
5 patent that trips the release of a frame and its apparatus and re-sets or re-
6 positions by hand the frame and its apparatus (this invention not to be
7 understood as being limited to the apparatus disclosed in the noted patent).
8 This invention is found in a tripping and re-cocking mechanism for an
9 apparatus by actuation of a pivotal arm about a standard which with a pivotal
10 link is connected to the frame of the apparatus, such actuation causing a re-
11 cocking of the tripped mechanism thus re-positioning the released frame and
12 its apparatus into its operational mode. The re-cocking results in the apparatus
13 being placed into its re-set position for another cycle or step of operation. A
14 bearing, preferably a roller bearing, is mounted on the free end of a second-
15 class lever and is seated in the re-set position on a platform or ledge that is
16 mounted on a standard connected to the apparatus. Means, connected to the
17 frame of the apparatus, is provided, for example, a solenoid, for releasing the
18 bearing from its platform or ledge during operation of the apparatus, shifting
19 the apparatus into a non-re-set or different position. With such release, the
20 second-class lever no longer holds the frame and its apparatus in its re-set
21 position; the frame and apparatus shift or drop to a different or lower position.
22 After completion of the cycle or step of operation the frame of the apparatus
23 is re-set by actuation of the pivotal arm. As the arm pivots, the bearing on the
24 free end of the second-class lever reaches the platform or ledge on the
25 standard to re-cock the tripping mechanism and thus re-position the apparatus
26 in preparation for its next cycle or step of operation, and irrespective of the
27 solenoid. The platform or ledge on the standard is lengthwise adjustable so
28 that the frame and apparatus can be raised or lowered to a desired level prior
29 to or after a cycle or step of operation by the apparatus.

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1 An object of this invention is to eliminate a heavy manual technique
2 in shifting the frame and its apparatus to re-set it in its operational mode.

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4 Another object of the invention is to provide a more efficient way to
5 achieve the same result as was attained in its previously generated manner.

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7 A further object of this invention is to combine its subject matter with
8 an apparatus for testing the co-efficient of friction of a road surface.

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10 Yet another object of the invention is to combine its subject matter
11 with apparata different from that of an apparatus for testing the co-efficient of
12 friction of a road surface.

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14 These and other objects and advantages of the invention will become
15 more apparent by a full and complete reading of the following description, its
16 accompanying drawing FIGURES comprising five (5) sheets of five (5)
17 FIGURES, and the appended claims.

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20 Brief Description of the Drawing

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23 FIG. 1 is a fragmentary plan view of an apparatus and mechanism to
24 which the present invention is applied.

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26 FIG. 2A is a side view of the apparatus and mechanism taken on line
27 2A - 2 A of FIG. 1

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29 FIG. 2B is a view of the other side of the apparatus and mechanism
30 taken on line 2B - 2B of FIG. 1.

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FIG. 3 is an end view of the apparatus of FIGS. 1, 2A, and 2B, illustrating the re-cocked position of the tripping mechanism for the apparatus.

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4 FIG. 4 is an end view of the apparatus of FIGS. 1, 2A and 2B,
5 illustrating the un-cocked position of the tripping mechanism for the
6 apparatus.

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13 Referring now to the drawing FIGURES wherein reference characters
14 correspond to like numerals hereinafter, FIGS. 1 - 4 illustrate an apparatus 200
15 to which the tripping and re-cocking mechanism of the present invention is
16 coupled. It should be understood in the reading of this disclosure, reference
17 characters appearing in the drawing less than the numeral 200 refer to
18 reference characters illustrated in the drawing in U.S. Ltrs Patent No.
19 6,681,614 and which correspond to their descriptions of the elements
20 described in that patent. Some are illustrated here to provide clarity in the
21 reading of this disclosure. The apparatus 200 and mechanism 202 of this
22 description is combined with that of the disclosure in Letters Patent No.
23 6,681,614, and to which the subject matter of the present invention is
24 applicable, as well as to other apparata that require a shifting of its frame or
25 structure for operation. It is to be understood that the noted patent's
26 disclosure is incorporated by reference into this disclosure.

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28 Turning to FIGS. 3 and 4, the tripping and re-cocking mechanism 202
29 of this invention is shown in its cocked mode and in its released mode,
30 respectively. A second-class lever 204 is suitably pivotally mounted as at 205

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1 to a member such as a block 206 secured to or formed as part of a
2 casting 209 that is a member of frame 214 of apparatus 200. A bearing 215,
3 preferably a roller bearing, is suitably secured at the lever's point of resistance
4 216 opposing its pivotal mount 205. Bearing 215 is seated, FIG. 3, on a
5 platform or ledge 217 that functions in a latching manner on bearing 215.
6 Platform or ledge 217 is formed on or secured to a sleeve 220 threadedly
7 mounted to a threaded standard 221 that projects through a co-operating bore
8 222 in block 206, thus, connecting standard 221 to frame 217. A handle 223 is
9 suitably secured to sleeve 220 for adjusting the platform or ledge 117 along
10 the length of standard 221. A caster assembly 225, though not necessary
11 should apparatus 200 not be portable or movable, is secured to the bottom of
12 standard 221. It should be understood that the invention is not limited to its
13 application merely to a rear-end caster assembly as illustrated in the disclosure
14 of the noted patent or merely to a rear end of another apparatus.

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16 A solenoid 227 is securely mounted by a flanged support bar 229
17 bolted to a backing plate 230 which in turn is securely fixed such as by bolting
18 to casting 209, i.e., to frame 214. Its shaft 228 is connected to a link 231 that
19 is an upwardly extending extension of lever 216 that is fixed to bearing 215,
20 so that upon the pull of shaft 227 in the energization of solenoid 228
21 bearing 215 is linearly displaced from its latched state on platform or ledge
22 217.

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24 A first-class lever or arm 232 is pivotally mounted to and adjacent to
25 the bottom end of standard 221 and is actuated at its one end at which a foot
26 pedal 233 is mounted for ease in operation of the invention, removing to a
27 considerable extent labor-activated efforts to re-set the position of an
28 apparatus to which mechanism 202 is combined or connected. The one end of
29 a link 234 is pivotally mounted at the other end 237 of arm 232 and the other
30 end of link 234 is pivotally mounted to a split clamp 239 that is tightened
31 about tubular member 26 (see FIGS 1 and 2 of the noted patent) representing
32 the frame 214 of the drawing herein and to which the subject matter of this

1 invention is applied. Socket-head cap screws 240 connect together the
2 halves of clamp 239 for tightening about tubular member 26. It may be noted
3 that since link 234 pivots in its action about its fulcrum associated with split
4 clamp 239, the motion of the fulcrum in the end 237 of arm 232 is an arc and
5 as such arm 232 does have a horizontal component of movement, although in
6 the range of motion of apparatus 200, this horizontal component of movement
7 can be treated as negligible.

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9 In operation of the invention, after apparatus 200 has completed its
10 cycle or operation, its frame, represented by casting 209, is in its lowered or
11 non-operational position. FIG. 4 illustrates the non-operational position of
12 apparatus 200, the bearing 215 of second-class lever 204 unlatched from
13 platform or ledge 217. Further, it maybe noted that tire 60 engages the road
14 surface or floor 78, which reflects that the cycle or step of operation of an
15 apparatus, such as 200, is ended and in which the frame of the apparatus has
16 shifted to its non-operational mode or position. To raise casting 209 and its
17 frame and apparatus 200 to its upper or re-set position, prior to initiation of the
18 next cycle or step of operation for apparatus 200, arm 232 is actuated by
19 depressing foot pedal 233 of pivotal arm 232. Arm 232 pivots about standard
20 221, FIG. 3, thereby moving its pivotal link 234, and along with it shifts split
21 clamp 239 and its attached casting 209 that is part of the frame 214 of
22 apparatus 200. Concurrently, bearing 215 again seats upon its platform or
23 ledge 217, FIG. 3, re-cocking mechanism 202 and placing apparatus 200 into
24 its operational or re-set mode. It may be noted in FIG. 3 that tire 60 now is
25 elevated above road surface or floor 78, illustrating that apparatus 200 is in its
26 re-set or operational mode. Also, Fig. 4 illustrates that after un-cocking of
27 second-class lever 204, foot pedal 233 on pivotal arm 232 is in its elevated
28 orientation so that mechanism 202 is ready for operation by depressing pedal
29 233 to once again re-cock second-class lever 204 by which apparatus 200
30 becomes operational.

1 Further, in the operation of ⁷  apparatus 200, solenoid 228, in
2 its energization, pulls its shaft 227 and in so doing, draws or uncocks bearing
3 215 from its platform on ledge 217 that is coupled or mounted to standard 221
4 that is part of apparatus 200. Consequently, frame 214 drops, or shifts,
5 thereby shifting apparatus 200 from its operational to its non-operational
6 position. Elements other than solenoid 228 which perform the same function
7 are contemplated within the scope of this invention.

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9 Apparatus 200 can be elevated to any desired level from road surface
10 or floor 78 by adjusting through the turning of handle 223 the sleeve 220, and
11 thus platform or ledge 217, to any point along the length of threaded standard
12 221. The depth of an apparatus may require such an adjustment.

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14 Various changes and modifications may be made to mechanism 202
15 and apparatus 200 without departing or varying from the scope and spirit of
16 the following appended claims of the invention.

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19 Industrial Applicability

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22 The invention is applicable to devices or apparata in various classes of
23 art and is not limited to devices classified only in Class 73 in the U.S. Patent
24 Office classification of the arts.

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